

IN THE SPECIFICATION

Please replace the paragraph [006] with the following rewritten paragraph:

[0006] According to one aspect of the present invention, the phosphor has a formula of $AB_3O_6:Ce,Mn$, wherein A is at least a rare-earth metal other than cerium. In this disclosure, the elements follow a colon denote the activators in the phosphor. Further, chemical formulae are used to represent materials in such a way that, whenever more than two elements are included within a parenthesis, it implies that at least one of the elements need to be present in the material.

Please replace the paragraph [008] with the following rewritten paragraph:

[0008] According to another aspect, the present invention provides a method for making a phosphor that comprises an oxide of: (a) boron; (b) at least a rare-earth metal other than cerium; (c) cerium; and (d) manganese. The method comprises: (a) mixing oxygen-containing compounds of: (1) boron; (2) at least a rare-earth metal other than cerium; (3) cerium, and (4) manganese; and (b) firing the mixture in a reducing atmosphere at a temperature in a range from about ~~900°C~~900°C to about ~~1300°C~~1300°C for a time sufficient to convert the mixture to the phosphor.

Please replace the paragraph [009] with the following rewritten paragraph:

[009] According to another aspect, a method for making a phosphor comprises: (a) providing a first solution that comprises compounds of: (1) boron; (2) at least a rare-earth metal other than cerium; (3) cerium, and (4) manganese; (b) combining the first solution and a second solution, the second solution comprising at least a compound selected from the group consisting of ammonium hydroxide; hydroxides of at least one element selected from the group consisting of cerium, manganese, said at least a rare-earth metal other than

cerium; organic esters; organic dicarboxylic acids; and organic amines to produce a precipitate; (c) heating the precipitate in an oxygen-containing atmosphere at a temperature in a range from about ~~700~~700°C to about ~~1300~~1300°C for a time sufficient to convert the precipitate to an oxygen-containing material that comprises boron, said at least a rare-earth metal other than cerium, cerium, and manganese; and (d) firing said oxygen-containing material in a reducing atmosphere at a temperature in a range from about ~~900~~900°C to about ~~1300~~1300°C for a time sufficient to convert said oxygen-containing material to the phosphor.

Please replace the paragraph [010] with the following rewritten paragraph:

[0010] According to still another aspect of the present invention, a method for making a phosphor comprises: (a) providing a first solution that comprises compounds of: (1) at least a rare-earth metal other than cerium; (2) cerium; and (3) manganese; (b) combining the first solution and a second solution, the second solution comprising at least a compound selected from the group consisting of ammonium hydroxide; hydroxides of at least one element selected from the group consisting of cerium, manganese, said at least a rare-earth metal other than cerium; organic dicarboxylic acids; and organic amines to produce a precipitate; (c) heating the precipitate in an oxygen-containing atmosphere at a temperature in a range from about ~~700~~700°C to about ~~1300~~1300°C for a time sufficient to convert the precipitate to an oxygen-containing material that comprises cerium, manganese, and said at least a rare-earth metal other than cerium; (d) combining said oxygen-containing material with at least an oxygen-containing compound of boron to produce a mixture; and (e) firing said mixture in a reducing atmosphere at a temperature in a range from about ~~900~~900°C to about ~~1300~~1300°C for a time sufficient to convert said mixture to the phosphor.

Please replace the paragraph [025] with the following rewritten paragraph:

[0025] The oxygen-containing compounds may be mixed together by any mechanical method including, but not limited to, stirring or blending in a high-speed blender or a ribbon blender. The oxygen-containing compounds may be combined and pulverized together in a bowl mill, a hammer mill, or a jet mill. The mixing may be carried out by wet milling especially when the mixture of the oxygen-containing compounds is to be made into a solution for subsequent precipitation. If the mixture is wet, it may be dried first before being fired to a temperature in the range from about ~~900~~900°C to about ~~1300~~1300°C. The drying may be carried out at ambient atmosphere or under a vacuum. The firing may be conducted in a batchwise or continuous process, preferably with a stirring or mixing action to promote good gas-solid contact. A firing time in a range from about 1 minute to about 10 hours is adequate. It should be noted that the firing time can depend on the amount of material being treated to produce the phosphor, or on the extent of contact between the solid and the gas of the atmosphere, or on the degree of mixing while the mixture is fired or heated. Preferably, the temperature is in the range from about ~~900~~900°C to about ~~1200~~1200°C.

Please replace the paragraph [0026] with the following rewritten paragraph:

[0026] The mixture can be rapidly brought to and held at the final temperature. Alternatively, the mixture may be heated up to the final temperature at a lower rate, such as from about ~~10C/minute~~10° C/minute to about ~~200C/minute~~200° C/minute, preferably from about ~~10C/minute~~10° C/minute to about ~~100C/minute~~100° C/minute.

Please replace the paragraph [0032] with the following rewritten paragraph:

[0032] According to another aspect, a method for making a phosphor comprises: (a) providing a first solution that comprises compounds of: (1) boron; (2) at least a rare-earth metal other than cerium; (3) cerium, and (4) manganese; (b) combining the first solution and a second solution, the second solution comprising at least a compound selected from

the group consisting of ammonium hydroxide; hydroxides of at least one element selected from the group consisting of cerium, manganese, and said rare-earth metals other than cerium; organic esters; organic dicarboxylic acids; and organic amines to produce a precipitate; (c) heating the precipitate in an oxygen-containing atmosphere at a temperature in a range from about ~~700~~700°C to about ~~1300~~1300°C for a time sufficient to convert the precipitate to an oxygen-containing material that comprises boron, cerium, manganese, and said at least a rare-earth metal other than cerium; and (d) firing said oxygen-containing material in a reducing atmosphere at a temperature in a range from about ~~900~~900°C to about ~~1300~~1300°C for a time sufficient to convert said oxygen-containing material to the phosphor.

Please replace the paragraph [0034] with the following rewritten paragraph:

[0034] In another embodiment, oxides or other oxygen-containing compounds of boron, cerium, manganese, and said at least a rare-earth metal other than cerium are dissolved in an acidic solution to form the first solution, such as hydrochloric acid, nitric acid, sulfuric acid, citric acid, or acetic acid. The strength of the acid solution is chosen to rapidly dissolve the oxides or the oxygen-containing compounds, and the choice is within the skill of a person skilled in the art. The second solution (e.g., ammonium hydroxide) is then added in increments to the first solution while stirring to precipitate a mixture of oxygen-containing compounds of said first element, said second element, cerium, and terbium. An organic base; such as methanolamine, ethanolamine, propanolamine, dimethanolamine, diethanolamine, dipropanolamine, trimethanolamine, triethanolamine, or tripropanolamine; may be used in place of ammonium hydroxide. Alternatively, an ester of an organic acid may be used to carry out the precipitation; such as methyl, ethyl, or propyl esters of acetic acid, propionic acid, butyric acid, oxalic acid, malonic acid, succinic acid, or glutaric acid; dimethyl, diethyl, dipropyl esters of oxalic acid, malonic acid, succinic acid, or glutaric acid. Alternatively, an organic acid selected from the group consisting of oxalic acid, malonic acid, succinic acid, and glutaric acid, may be

used to produce the precipitate. The precipitate is filtered, washed with deionized water, and optionally dried. The dried precipitate is ball milled or otherwise thoroughly blended and then fired in said reducing atmosphere at ~~1000~~1000°C a temperature in the range from about ~~900~~900°C to about ~~1300~~1300°C, preferably from about ~~1200~~1200°C. Alternatively, the wet precipitate can be heated or fired first, and then ball milled or otherwise thoroughly blended afterward.

Please replace the paragraph [0038] with the following rewritten paragraph:

[0038] According to still another aspect of the present invention, a method for making a phosphor comprises: (a) providing a first solution that comprises compounds of: (1) at least a rare-earth metal other than cerium; (2) cerium, and (3) manganese; (b) combining the first solution and a second solution, the second solution comprising at least a compound selected from the group consisting of ammonium hydroxide; hydroxides of at least one element selected from the group consisting of cerium, manganese, and said at least a rare-earth metal other than cerium; organic esters; organic dicarboxylic acids; phosphoric acid; and organic amines to produce a precipitate; (c) heating the precipitate in an oxygen-containing atmosphere at a temperature in a range from about ~~700~~700°C to about ~~1300~~1300°C for a time sufficient to convert the precipitate to an oxygen-containing material that comprises cerium, manganese, and said at least a rare-earth metal other than cerium; (d) combining said oxygen-containing material with at least an oxygen-containing compound of boron to form a mixture; and (e) firing said mixture in a reducing atmosphere at a temperature in a range from about ~~900~~900°C to about ~~1300~~1300°C for a time sufficient to convert said oxygen-containing material to the phosphor.

Please replace the paragraph [0040] with the following rewritten paragraph:

[0040] In another embodiment, oxides or other oxygen-containing compounds of cerium, manganese, and said at least a rare-earth metal other than cerium are dissolved in an acidic solution to form the first solution, such as hydrochloric acid, nitric acid, sulfuric acid, citric acid, or acetic acid. The strength of the acid solution is chosen to rapidly dissolve the oxides or the oxygen-containing compounds, and the choice is within the skill of a person skilled in the art. The second solution (e.g., ammonium hydroxide) is then added in increments to the first solution while stirring to precipitate a mixture of oxygen-containing compounds of cerium, manganese, and said at least a rare-earth metal other than cerium. An organic base; such as methanolamine, ethanolamine, propanolamine, dimethanolamine, diethanolamine, dipropanolamine, trimethanolamine, triethanolamine, or tripropanolamine; may be used in place of ammonium hydroxide. Alternatively, an ester of an organic acid may be used to carry out the precipitation; such as methyl, ethyl, or propyl esters of acetic acid, propionic acid, butyric acid, oxalic acid, malonic acid, succinic acid, or glutaric acid; dimethyl, diethyl, dipropyl esters of oxalic acid, malonic acid, succinic acid, or glutaric acid. Alternatively, an organic acid selected from the group consisting of oxalic acid, malonic acid, succinic acid, and glutaric acid, may be used in the second solution to produce the precipitate. The precipitate is filtered, washed with deionized water, and optionally dried. The dried precipitate may be ball milled or otherwise thoroughly blended before being combined with oxygen-containing compounds of phosphorus and/or boron, and then fired in said reducing atmosphere at a temperature in the range from about ~~900~~900°C to about ~~1300~~1300°C, preferably from about ~~1000~~1000°C to about ~~1200~~1200°C.

Please replace the paragraph [0046] with the following rewritten paragraph:

[0046] A phosphor of the present invention can be blended with other phosphors that emit blue, green, and red light to provide white light. For example, the borate phosphor of the Example can be blended with $(\text{Ba}, \text{Sr}, \text{Ca})\text{MgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}$; $(\text{Y}, \text{In})\text{BO}_3:\text{Eu}^{3+}$; and $\text{Y}_2\text{O}_3:\text{Eu}^{3+}$ phosphors such that the contributions of each individual phosphor to the

combined spectral power are 36.9, 44.4, 29.9, and 18.7, respectively. This simulated combination is shown to provide a color rendering index ("CRI") of 79, a ~~_____ of 345.2,~~ a radiant output of 83.5 lumens per watt, and a correlated temperature of 4000 K. This phosphor blend is projected to have a one-percent improvement in energy efficiency over a blend wherein $\text{LaPO}_4\text{:Ce, Tb}$, replaces the borate phosphor.